

REMARKS

Claims 1, 3, 5-10 and 17 are pending in this application. By this Amendment, claim 1 is amended to incorporate the feature of claim 16 therein, and to include a feature from original claim 4. Claim 16 is canceled. The specification is amended to correct typographical errors. Thus, no new matter is added by this amendment.

Entry of the amendment is proper under 37 CFR §1.116 since the amendment: (a) places the application in condition for allowance for the reasons discussed herein; (b) does not raise any new issue requiring further search and/or consideration since the amendment amplifies issues previously discussed throughout prosecution and incorporates subject matter from dependent claims into an independent claim; (c) does not present any additional claims without canceling a corresponding number of finally rejected claims; and (d) places the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

I. Allowable Subject Matter

Applicants thank the Examiner for the indication that claims 7 and 9 are allowed.

II. Specification

Table 3, at page 17 of the specification, is herein amended to correct typographical errors. Specifically, as supported by the attached Declaration under 37 C.F.R. §1.132 and by the priority document (page 13 of which is attached hereto), in the last line of Table 3, "151 should be "457" and "0.35" should be "0.33". Thus, no new matter is added by this amendment to Table 3.

III. Rejection Under 35 U.S.C. §112

Claims 1, 3, 5, 6, 8, 10, 16 and 17 were rejected under 35 U.S.C. §112, first paragraph for failing to comply with the written description requirement. In particular the Office Action

alleges that there is no apparent support for a fatigue limit ratio of 0.3 or more, or 0.3 or more with soft nitriding. This rejection is respectfully traversed.

Applicants herein amend claim 1 to recite that the fatigue limit ratio is 0.35 or more, and to recite at least one of Ni, Cu, Mo, Cr, and Mn is contained in a total amount of 0.7 to 5 mass %. The lower limit of the amount of the additive element was originally recited in original claim 4. The feature of the fatigue limit ratio being 0.35 or more was recited in claim 16. Furthermore, the lower limit of the fatigue limit ratio is supported at, for example, page 5 of the specification where it states "the C content for enhancing the fatigue limit ratio to 0.35 or higher is in a range of 0.1 to 0.7 mass %." This description shows that the fatigue limit ratio is 0.35 or more with the claimed C content. Thus, the amendments to claim 1 do not constitute new matter.

Although the highest fatigue limit ratio disclosed in the specification is 0.53, Applicants submit that a fatigue limit ratio higher than the ratio disclosed in the specification can be optionally obtained.

Attached is a table further describing the results of the examples described in pages 12 to 18 of the specification. The underlined data in this table corresponds to the data corrected in Table 3, which is included with the attached Declaration.

As shown in the middle line of the attached table, the samples in Tests (1) to (4) have the same data. Therefore, although Tests (2) and (4) are silent about the time for steam treatment, it is apparent that the treatment time is the same as the time in Test (1) in which the mixed powder of iron powder was prepared by adding 0.5% of graphite powder and 2.0% of

copper powder, and the test piece was treated in steam at 570°C in mesh belt furnace for 15 minutes. In the attached table, the C content in Test (4) is presumed from Tests (1) to (3) and the roundness in Tests (2) and (4) is presumed from Test (1).

In the sample on the 10th line of the attached table in which the steam treatment was not performed, the roundness of pores was decreased to 0.0033 and the fatigue limit ratio was decreased to 0.273. In contrast, in the sample which was treated in steam at 570°C in mesh belt furnace for 5 minutes, the roundness of pores was increased to 0.004 and showed improved fatigue limit ratio. The roundness of pores was increased and the fatigue limit ratio was improved as the time for the steam treatment was extended.

In the sample of which amount of the additive element is 0.1 mass % or 6.0 mass %, the fatigue limit ratio was decreased to about 0.3 although the roundness of pores was 0.004 or more. In contrast, all the samples of which the amount of the additive element is 0.7 to 5.0 mass % had high fatigue limit ratio, and the minimum value thereof was 0.35. Therefore, a fatigue limit ratio of 0.35 or more when the amount of the additive element is 0.7 to 5 mass % is supported by the specification.

Similarly, in the C content after sintering, the examples support that all the samples had a fatigue limit ratio of 0.35 or more when the C content was 0.1 to 0.7 mass % and steam treatment was performed.

Thus, the mechanical fuse with roundness of pores of 0.004 or more, an additive element of 0.7 to 5 mass %, and a C content of 0.1 to 0.7 mass % exhibiting a fatigue limit ratio of 0.35 or more is supported by the examples in the specification. Therefore, the subject matter of claim 1 is supported by the examples in the specification.

As discussed in the November 8 Amendment, Applicants submit that the fatigue limit ratio is not limited to an upper limit. As shown in the examples of Test (1) using the pot furnace, the roundness of pores was increased by extending the time for the steam treatment

and the fatigue limit ratio improved. Therefore, one skilled in the art would know to further increase the roundness of pores and the fatigue limit ratio by further extending the time for the steam treatment. Therefore, the upper limit of the fatigue limit ratio is not restricted by the range shown in the examples. Furthermore, there is no advantage to limit the upper range of the fatigue limit ratio since superior properties can be obtained by limiting the lower range thereof.

Applicants submit that for the foregoing reasons the rejection under 35 U.S.C. §112, first paragraph, is overcome. Reconsideration and withdrawal of the rejection are thus respectfully requested.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 3, 5-10 and 17 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachments:

Petition for Extension of Time
Declaration Under 37 CFR 1.132
Copy of Page 13 from the Priority Document
Table

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